

Navy Case No. 77222

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No:	08/908,778	Examiner:	Gims S Philippe
Filing Date:	August 7, 1997		
Applicant:	Richard Scheps	Art Unit:	2613

Title: **HIGH RESOLUTION IMAGING LIDAR FOR DETECTING
SUBMERGED OBJECTS**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

August 26, 2003

PETITION TO WITHDRAW ABANDONMENT UNDER 37 C.F.R. §1.181

Sir:

Applicant hereby petitions to withdraw the holding of abandonment in paper #20 dated
July 14, 2003 of the above-identified case.

Brief Synopsis

In paper #20 the Examiner abandoned Applicant's case because "...the period for seeking court review of the decision has expired and *there are no allowed claims.*" [emphasis added]

Applicant contends that the holding of abandonment is improper and should be withdrawn because Examiner failed to comply with his obligations set forth in MPEP §1214.06(I)(B), by either performing an examiner's amendment or setting a one-month time limit, during which, Applicant could have amended the application.

Background

1. The case was filed on August 7, 1997.
2. On August 10, 2001 Examiner finally rejected Claims 1-7.
3. Applicant filed a notice of appeal on October 10, 2001 followed by an appeal brief on December 10, 2001.
4. The Board of Appeals and Interferences mailed their decision on January 23, 2003, whereby the rejection of claims 1-3, 5, and 7 was affirmed and the rejection of claims 4 and 6 was REVERSED.
5. Examiner issued a Notice of Abandonment dated July 14, 2003.

Arguments

MPEP §1214.06, section I, part B states, in part:

If the Board or court affirms a rejection against an independent claim and reverses all rejections against a claim dependent thereon, the examiner, after expiration of the period for further appeal, should proceed in one of two ways:

- (1) Convert the dependent claim into independent form by examiner's amendment, cancel all claims in which the rejection was affirmed, and issue the application; or
- (2) Set a 1-month time limit in which appellant may rewrite the dependent claim(s) in independent form. Extensions of time under 37 CFR 1.136(a) will not be permitted. If no timely reply is received, the examiner will cancel all rejected and objected to claims and issue the application with the allowed claims only.

By the decision of the Board of Appeals and Interferences, dated January 23, 2003, the rejection to independent claim 1 was affirmed and the rejections of dependent claims 4 and 6, which depend from claim 1, was reversed. Applicant contends that Examiner should have proceeded in one of the two ways mentioned above in MPEP §1214.06(I)(B). Instead, the Examiner issued a notice of abandonment in paper #20 on July 14, 2003.

In a telephonic conversation with Applicant's Agent on August 25, 2003, Examiner stated that the one-month time limit outlined in MPEP §1214.06(I)(B)(2) starts automatically when Applicant receives the Board's decision. This is clearly an erroneous interpretation for at least two reasons:

1.) MPEP §1214.06(I)(B) states that, "...the examiner, *after expiration of the period for further appeal*, should proceed in one of two ways..." This section clearly states that it is the Examiner's action to proceed and only after the period for further appeal has expired. It is not Applicant's burden to proceed nor does the 1-month time limit start automatically when the Board's decision is received, as suggested by Examiner.

2.) MPEP §1214.06(I)(B) also explicitly states Examiner's obligations to either convert the dependent claims into independent form by examiner's amendment OR set a 1-month time limit in which appellant may rewrite the claims. Applicant contends that the second option requires that notice must be given to Applicant so that they may be given fair opportunity to comply with the request. This interpretation is further evidenced by MPEP §1214.06(I) where suggested language is given for Examiner's to use when notifying Applicant's of their 1-month time limit. Applicant never received any notice of any 1-month time limit and would have timely responded had notice been given. If Examiner's position is followed, how is an Applicant to know whether the Examiner has begun an examiner's amendment or whether a 1-month time

limit has started, during which the Applicant must submit an amendment? Again, Examiner's argument of an automatic 1-month time limit fails to correspond with the requirements explicitly stated in the MPEP.

Conclusion

An examiner's amendment was not completed by Examiner, nor was there any notice submitted to Applicant, notifying him of a 1-month time limit to amend the claims. Therefore, the abandonment of this case is improper and should be withdrawn. Applicant respectfully petitions that the holding of abandonment be withdrawn and that application be remanded to the Examiner for compliance with the requirements outlined in MPEP 1214.06(I)(B).

No Fee is required for this response.

In addition, attached hereto are copies of paper numbers 19 and 20.

Respectfully submitted,

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/908,778	08/07/1997	RICHARD SCHEPS	77222	9865

7590 07/14/2003

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EXAMINER

PHILIPPE, GIMS S

ART UNIT

PAPER NUMBER

2613

DATE MAILED: 07/14/2003

20

Please find below and/or attached an Office communication concerning this application or proceeding.

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MC
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Notice of Abandonment

Application No.

08/908,778

Examiner

Gims S Philippe

Applicant(s)

SCHEPS, RICHARD

Art Unit

2613

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

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This application is abandoned in view of:

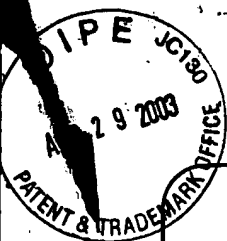
Technology Center 2600

1. ☐ Applicant's failure to timely file a proper reply to the Office letter mailed on _____.
 - (a) ☐ A reply was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply (including a total extension of time of _____ month(s)) which expired on _____.
 - (b) ☐ A proposed reply was received on _____, but it does not constitute a proper reply under 37 CFR 1.113 (a) to the final rejection.
(A proper reply under 37 CFR 1.113 to a final rejection consists only of: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114).
 - (c) ☐ A reply was received on _____ but it does not constitute a proper reply, or a bona fide attempt at a proper reply, to the non-final rejection. See 37 CFR 1.85(a) and 1.111. (See explanation in box 7 below).
 - (d) ☐ No reply has been received.
2. ☐ Applicant's failure to timely pay the required issue fee and publication fee, if applicable, within the statutory period of three months from the mailing date of the Notice of Allowance (PTOL-85).
 - (a) ☐ The issue fee and publication fee, if applicable, was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the statutory period for payment of the issue fee (and publication fee) set in the Notice of Allowance (PTOL-85).
 - (b) ☐ The submitted fee of \$_____ is insufficient. A balance of \$_____ is due.
The issue fee required by 37 CFR 1.18 is \$_____. The publication fee, if required by 37 CFR 1.18(d), is \$_____.
 - (c) ☐ The issue fee and publication fee, if applicable, has not been received.
3. ☐ Applicant's failure to timely file corrected drawings as required by, and within the three-month period set in, the Notice of Allowability (PTO-37).
 - (a) ☐ Proposed corrected drawings were received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply.
 - (b) ☐ No corrected drawings have been received.
4. ☐ The letter of express abandonment which is signed by the attorney or agent of record, the assignee of the entire interest, or all of the applicants.
5. ☐ The letter of express abandonment which is signed by an attorney or agent (acting in a representative capacity under 37 CFR 1.34(a)) upon the filing of a continuing application.
6. ☒ The decision by the Board of Patent Appeals and Interference rendered on 23 January 2003 and because the period for seeking court review of the decision has expired and there are no allowed claims.
7. ☐ The reason(s) below:

GIMS S. PHILIPPE
PATENT EXAMINER

Gims S Philippe
Primary Examiner
Art Unit: 2613

Petitions to revive under 37 CFR 1.137(a) or (b), or requests to withdraw the holding of abandonment under 37 CFR 1.181, should be promptly filed to minimize any negative effects on patent term.



AF/2613

PTO/SB/21 (03-03)

Approved for use through 04/30/2003. OMB 0651-0031

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TRANSMITTAL FORM (to be used for all correspondence after initial filing)	Application Number	08/908,778	
	Filing Date	08/07/97	
	First Named Inventor	Richard Scheps	
	Art Unit	2613	
	Examiner Name	Gims S. Philippe	
Total Number of Pages in This Submission	24	Attorney Docket Number	77222

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<input type="checkbox"/> Fee Attached	<input type="checkbox"/> Licensing-related Papers	<input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences
<input type="checkbox"/> Amendment/Reply	<input checked="" type="checkbox"/> Petition	<input type="checkbox"/> Appeal Communication-to-group (Appeal Notice, Brief, Reply Brief)
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<input type="checkbox"/> Affidavits/declaration(s)	<input type="checkbox"/> Power of Attorney, Revocation	<input type="checkbox"/> Status Letter
<input type="checkbox"/> Extension of Time Request	<input type="checkbox"/> Change of Correspondence Address	<input checked="" type="checkbox"/> Other Enclosure(s) (please identify below):
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<input type="checkbox"/> Information Disclosure Statement	<input type="checkbox"/> Request for Refund	Paper #20 (2 pages)
<input type="checkbox"/> Certified Copy of Priority Document(s)	<input type="checkbox"/> CD, Number of CD(s) _____	
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<input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual	Andrew J. Cameron
Signature	<i>Andrew J. Cameron</i>
Date	26 AUG 2003

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Signature	<i>Jane S. Nunez</i>
Date	26-Aug-03

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The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.



Paper No. 19

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RICHARD SCHEPS

Appeal No. 2002-1951
Application No. 08/908,778

ON BRIEF

MAILED

JAN 23 2003

PAT. & T.M. OFFICE
BOARD OF PATENT APPEALS
AND INTERFERENCES

Before JERRY SMITH, BARRY, and BLANKENSHIP, *Administrative Patent Judges*.
BARRY, *Administrative Patent Judge*.

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DECISION ON APPEAL

Technology Center

A patent examiner rejected claims 1-7. The appellant appeals therefrom under
35 U.S.C. § 134(a). We affirm-in-part.

BACKGROUND

The invention at issue on appeal concerns the imaging of an object submerged
in water. Both military and civilian applications require searching for certain objects
submerged in water. Detecting mines deployed in shipping lanes is an example of a
military application, (Spec. at 1); locating submerged cables, pipelines, barrels, and oil

drums is an example of a civilian application. (*Id.* at 1-2.) For such applications, light detection and ranging ("lidar" or "LIDAR"), which uses light energy in a way analogous to the use of electromagnetic energy in radio detection and ranging ("radar" or "RADAR"), (*id.* at 1), "is commonly applied to the problem of detecting submerged objects in shallow water. . . ." (*Id.* at 2.)

The appellant asserts that conventional scanning lidar performs poorly in ambient light. Because a blue-green laser is typically used for underwater transmission, he explains, sunlight scattered back to a photomultiplier tube degrades a signal-to-noise ratio. Although surface scattering dictates that a laser/detector platform be submerged to prevent heavy losses in the transmitted signal, (*id.* at 2-3), the appellant adds that the use of conventional continuous wave ("CW") lasers prevents locating such a platform on an aircraft for use above the surface of the water. (*Id.* at 3.)

The inventive lidar features a laser for generating a line scan of light beam pulses to illuminate an area surrounding a submerged target. An image acquisition controller selects pulse width and pulse rate of the light beam pulses emitted by the laser. More specifically, the appellant asserts that the scanning beam is pulsed at a rate sufficient for high data acquisition rates use in high-resolution imaging applications

and at a high energy efficiency suitable for airborne platforms. (*Id.* at 4.) A photomultiplier tube detects energy from the light beam pulses scattered by the target and generates an output signal representing a series of pixels corresponding to the light beam pulses. The output signal is gated to block light scattered from ranges other than a selected range window for the target, e.g., from the water's surface. (*Id.* at 3-4.) In addition, they add that signal-to-noise ratio is improved relative to current line scanning systems using a CW laser by gating the received pulse to exclude most of the ambient sunlight and surface scattered light reaching the scanning beam detector. (*Id.* at 4.) A display generates an image from the output signal representing the target.

A further understanding of the invention can be achieved by reading the following claim.

1. An imaging lidar comprising:

a pulsed laser for generating at a pulse rate a sequence of light beam pulses each having a pulse width;

a spatial discriminator coupled to the pulsed laser for steering the light beam pulse sequence in a plurality of line scans describing an area surrounding a target, each said line scan including a plurality of said light beam pulses;

a photomultiplier tube for detecting energy from said light beam pulses scattered by said target and for generating an output signal representative of said scattered light beam pulse energy;

an image acquisition controller coupled to said pulsed laser and to said photomultiplier tube for selecting said pulse width and said pulse rate of said light beam pulses and for generating a display signal from said output signal of said photomultiplier tube;

and a display coupled to said controller for generating an image from said display signal representative of said target.

Claims 1, 3, 5, and 7 stand rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 5,457,639 ("Ulich"). Claim 2 stands rejected under 35 U.S.C. § 103(a) as obvious over Ulich in view of U.S. Patent No. 5,822,047 ("Contarino"). Claim 4 stands rejected under 35 U.S.C. § 103(a) as obvious over Ulich in view of U.S. Patent No. 5,082,639 ("Schneiter"). Claim 6 stands rejected under 35 U.S.C. § 103(a) as obvious over Ulich in view of U.S. Patent No. 5,117,126 ("Geiger").

OPINION

Our opinion addresses the following rejections:

- anticipation rejection of claims 1, 3, 5, and 7
- obviousness rejections of claims 2, 4, and 6.

Anticipation Rejection of Claims 1, 3, 5, and 7

Rather than reiterate the positions of the examiner or the appellant *in toto*, we address the two points of contention therebetween. First, the examiner asserts,

"[b]ecause in col. 7, lines 16-19, Ulich '639 clearly states that '*the high degree of scan lines provides for precise image to image intercalibration and registration*' while Ulich '639 discloses a scanner 20 providing the discrimination, it should be concluded that line scanning is a 'must' in Ulich '639. " (Examiner's Answer at 9.) He adds, "[a]n example of such line scanning is shown in figs. 3A-3B where the scan lines are clearly shown." (*Id.*) The appellant argues, "Ulich '639 fails to anticipate the spatial discriminator ('line scan') element of Appellant's invention as claimed in claim 1." (Appeal Br. at 5.)

"Analysis begins with a key legal question -- *what is the invention claimed?*" *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1567, 1 USPQ2d 1593, 1597 (Fed. Cir. 1987). In answering the question, "the Board must give claims their broadest reasonable construction. . . ." *In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1668 (Fed. Cir. 2000). "Moreover, limitations are not to be read into the claims from the specification." *In re Van Geuns*, 988 F.2d 1181, 1184, 26 USPQ2d 1057, 1059 (Fed. Cir. 1993) (citing *In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989)).

Here, claim 1 specifies in pertinent part the following limitations: "a spatial discriminator coupled to the pulsed laser for steering the light beam pulse sequence in a plurality of line scans describing an area surrounding a target, each said line scan including a plurality of said light beam pulses. . . ." Giving the claim its broadest, reasonable construction, the limitations require steering light pulses from a laser into a pattern of scanning lines.

"Having construed the claim limitations at issue, we now compare the claims to the prior art to determine if the prior art anticipates those claims." *In re Cruciferous Sprout Litig.*, 301 F.3d 1343, 1349, 64 USPQ2d 1202, 1206 (Fed. Cir. 2002). "[A]nticipation is a question of fact." *Hyatt*, 211 F.3d at 1371, 54 USPQ2d at 1667 (citing *Bischoff v. Wethered*, 76 U.S. (9 Wall.) 812, 814-15 (1869); *In re Schreiber*, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997). "A claim is anticipated . . . if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros., Inc. v. Union Oil Co.*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) (citing *Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 715, 223 USPQ 1264, 1270 (Fed. Cir. 1984); *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548, 220 USPQ

193, 198 (Fed. Cir. 1983); *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 771, 218 USPQ 781, 789 (Fed. Cir. 1983)).

Here, Ulich's "transmitter assembly consists of the laser 16, a beam projector 26 and scanner 20." Col. 5, ll. 19-20. The laser generates "short [light] pulses for range resolution and daylight noise rejection." Col. 5, ll. 10-11. "The beam projector 26 modifies the spatial cross section of the laser beam 28 to provide the appropriate beam footprint 30 at the water surface 32." *Id.* at ll. 23-25. We find that once the cross section of the laser beam 28 is modified into the beam footprint 30, the reference's scanner 20 steers the modified light pulses into a pattern. Specifically, "[t]he scanner 20 **steers** the output of the beam projector to provide both an adequate swath width and to compensate for aircraft roll variations." *Id.* at ll. 23-27 (emphasis added).

In addition, Ulich describes the pattern of the modified light pulse as comprising scanning lines. Specifically, "[n]ote also that the high degree of overlap between . . . **scan lines** provides for precise image to image intercalibration and registration, and allows for large scale scene reconstruction." Col. 7, ll. 16-19 (emphasis added). "Referring to FIGS. 3A and 3B [of Ulich], the results of actual scanning are shown." *Id.* at ll. 33-34. For its part, Figure 3A depicts the scanning lines as horizontal lines on a

white oval that represent "a buoyant opaque object 45 suspended in a Scripps Ocean Tank." *Id.* at ll. 34-35. Therefore, we affirm the anticipation rejection of claim 1.

Turning to claims 3 and 7, we recall that claims that are not argued separately stand or fall together. *In re Kaslow*, 707 F.2d 1366, 1376, 217 USPQ 1089, 1096 (Fed. Cir. 1983) (citing *In re Burckel*, 592 F.2d 1175, 201 USPQ 67 (CCPA 1979)). When the patentability of a dependent claim is not argued separately, in particular, the claim stands or falls with the claim from which it depends. *In re King*, 801 F.2d 1324, 1325, 231 USPQ 136, 137 (Fed. Cir. 1986) (citing *In re Sernaker*, 702 F.2d 989, 991, 217 USPQ 1, 3 (Fed. Cir. 1983); *In re Burckel*, 592 F.2d 1175, 1178-79, 201 USPQ 67, 70 (CCPA 1979)).

Here, rather than arguing the patentability of claims 3 and 7 separately, the appellant stipulates that "[t]he rejected claims . . . form a single group drawn to an imaging lidar." (Appeal Br. at 4.) Therefore, dependent claims 3 and 7 fall with independent claim 1, and we affirm the anticipation rejection of claims 3 and 7.

Second, the examiner asserts, "[a]s per claim 5, Ulich et al. further discloses the same imaging lidar wherein the controller gates the output signal from the multiplier

tube to select a range interval that includes the target (See Ulich et al. col. 6, lines 42-53)." (Examiner's Answer at 5.) The appellant argues, "Ulich '639 neither teaches nor suggests the *range-gating* element of the invention as . . . claimed. . . ." (Appeal Br. at 5.)

Claim 5 specifies in pertinent part the following limitations: "a temporal discriminator for gating said output signal from said photomultiplier tube to select a range interval that includes said target." Giving the claim its broadest, reasonable construction, the limitations require gating to select a range interval.

Turning to Ulich, the reference's "receiver assembly comprises the scanner 20, beam collection optics (co-aligned with the transmitter) 34, a narrow band optical filter 36, and camera 18." Col. 5, ll. 28-30. We find that the camera performs gating. Specifically, "[c]amera 18 (either one or more cameras may be used) comprises a photocathode optimized for maximum response at the transmitted wavelength, a **gateable** microchannel plate (MCP) which provides . . . **gating**. . . ." *Id.* at ll. 31-34 (emphases added). We further find that gating is performed in Ulich to select a range interval bounded by the bottom of the water. Specifically, "[t]o accommodate rapid variations in bottom depth as the aircraft maneuvers along the coastline, a separate

time resolved bottom detector 66 is used to determine slant range to the local bottom. Timing information derived from this sensor is fed through line 68 to the instrument control computer 44 and is sent through line 70 to **trigger the gate circuits of the camera(s) 18 gates [sic] to ensure that the cameras follow the varying bottom depth.**" Col. 6, ll. 39-46. Furthermore, we agree with the examiner that the appellant "never show[s] the difference between Ulich '639 geatable [sic, gateable] microchannel plate (MCP) which provides both fast gating and low noise amplification (See Ulich '639 col. 5, lines 23-40) and the claimed 'range gating'." (Examiner's Answer at 10.)

Therefore, we affirm the anticipation rejection of claim 5.

Obviousness Rejections of Claims 2, 4, and 6

We address the main points of contention between the examiner and the appellant regarding claims 2, 4, and 6. "Regarding claim 2," (Examiner's Answer at 6), the examiner asserts, "one skilled in the art . . . would be motivated to incorporate the laser having a wavelength corresponding to blue-green color in Ulich et al.'s imaging lidar for the same purpose of minimizing absorption in water as taught by Contarino et al." (*Id.*) The appellant alleges, "[t]he Examiner offers no evidence of any kind, implicit or explicit, suggesting that it would be desirable to combine the teachings of Ulich '639 with those of Contarino. . . ." (Appeal Br. at 7.)

"Whether motivation to combine the references was shown [is] a question of fact." *Winner Int'l Royalty Corp. v. Wang*, 202 F.3d 1340, 1348, 53 USPQ2d 1580, 1586 (Fed. Cir. 2000) (citing *In re Dembiczak*, 175 F.3d 994, 1000, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999); *Monarch Knitting Mach. Corp. v. Sulzer Morat GMBH*, 139 F.3d 877, 881-83, 886, 45 USPQ2d 1977, 1982, 1985 (Fed. Cir. 1998)). "[T]he question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination." *In re Beattie*, 974 F.2d 1309, 1311-12, 24 USPQ2d 1040, 1042 (Fed. Cir. 1992) (quoting *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1462, 221 USPQ 481, 488 (Fed. Cir. 1984)). "[E]vidence of a suggestion, teaching, or motivation to combine may flow from the prior art references themselves, the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved. . . ." *Dembiczak*, 175 F.3d at 999, 50 USPQ2d at 1617 (citing *Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1630 (Fed. Cir. 1996); *Para-Ordnance Mfg. v. SGS Imports Int'l, Inc.*, 73 F.3d 1085, 1088, 37 USPQ2d 1237, 1240 (Fed. Cir. 1995)).

Here, we find that evidence of a suggestion, teaching, or motivation to combine Ulich and Contarino flows from the references themselves. Ulich teaches that the

wavelength of its laser 16 must be "chosen for optimal penetration into seawater," col. 5, ll. 12-13, within the range of "500 to 550 nm for coastal water. . . ." *Id.* at l. 13. For its part, Contarino discloses that using a wavelength of 532 nm, which is blue-green in color, "minimizes absorption in water. . . ." Col. 2, ll. 61-62. With absorption minimized, the "pulsed blue-green optical radiation . . . penetrates deep into the water. . . ." Col. 2, ll. 2-3. Because Ulich seeks a wavelength that optimizes penetration into water and specifies a range of wavelengths, and Contarino's blue-green wavelength penetrates deep into the water and lies within the range, we find that the combined teachings of the references would have suggested using a laser having a blue-green wavelength in Ulich's transmitter assembly. Therefore, we affirm the obviousness rejection of claim 2.

"As per claim 4," (Examiner's Answer at 6), admitting that, "Ulich et al. fails to particularly disclose the same imaging system wherein the pulse rate is about 600 KHz." (*id.* at 7), the examiner asserts, "Schneiter discloses the same imaging system wherein the pulse rate is about greater than 600 KHz (See Schneiter col. 16, lines 31-33)." (*Id.* at 7.) The appellant argues, "[n]othing in the Schneiter '362 reference in any way suggests the operating of an imaging lidar (or anything else) above 600 KHz; even the Schneiter '362 encoder chip operates no higher than 500 KHz." (Appeal Br. at 9.)

Although the examiner refers to "about greater than 600 KHz," claim 4 specifies in pertinent part the following limitations: "said pulse rate is **greater than** 600 KHz."¹ (Emphasis added.)

Having determined what subject matter is being claimed, the next inquiry is whether the subject matter would have been obvious. "In rejecting claims under 35 U.S.C. Section 103, the examiner bears the initial burden of presenting a *prima facie* case of obviousness." *In re Rijckaert*, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993) (citing *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992)). "A *prima facie* case of obviousness is established when the teachings from the prior art itself would . . . have suggested the claimed subject matter to a person of ordinary skill in the art." *In re Bell*, 991 F.2d 781, 783, 26 USPQ2d 1529, 1531 (Fed. Cir. 1993) (quoting *In re Rinehart*, 531 F.2d 1048, 1051, 189 USPQ 143, 147 (CCPA 1976)).

¹Claim 4 originally specified that "said pulse rate is about 700 KHz." (Paper No. 1 at 9.) Later, the limitation was amended to "greater than 600 KHz." (Paper No. 8 at 2.) Being primarily a board of review, we will let the examiner decide whether to make a rejection under 35 U.S.C. § 112, ¶ 1, as lacking an adequate written description.

Here, the passage of Schneiter cited by the examiner teaches that an "encoder reading section of the motor controller board can track encoder pulses at a rate up to 500 khz." Col. 16, ll. 31-33. We are not persuaded that the reference's disclosure of a maximum frequency of 500 kHz would have suggested the claimed pulse rate of greater than 600 kHz. Therefore, we reverse the obviousness rejection of claim 4.

"Regarding claim 6," (Examiner's Answer at 7)," admitting "that Ulich et al. fails to particularly disclose a periodically poled crystal gain element for generating laser output having frequency that is a multiple of a pumping frequency," (*id.* at 7), the examiner asserts, "Geiger discloses a periodically poled crystal gain element for generating laser output having frequency that is a multiple of a pumping frequency (See Geiger col. 5, lines 45-56, and col. 6, lines 7-15)." (*id.*) The appellant argues, "Geiger '126 neither teaches nor suggests a periodically-poled crystal pulsed laser but instead describes a multi-crystal parametric optical oscillator." (Appeal Br. at 10.)

Claim 6 specifies in pertinent part the following limitations: "said laser comprises a periodically poled crystal gain element for generating a laser output having a frequency that is a multiple of a pumping frequency."

Turning to Geiger, "[a] stacked OPO [i.e., optical parametric oscillator] is disclosed wherein two or more optically nonlinear media, such as crystals, are coaxilly [sic, coaxially] disposed in a single resonator." Abs., ll. 1-3. The first passages of the reference cited by the examiner concerns matching "the actual gain length of the first crystal . . . to that of the second crystal," col. 5, ll. 46-47; the second passage concerns equalizing "the effective gains of the two crystals. . . ." Col. 6, ll. 14-15. The examiner fails to show how either passage would have suggested using a periodically poled crystal gain element in Ulich's laser. Therefore, we reverse the obviousness rejection of claim 6.

CONCLUSION

In summary, the rejection of claims 1, 3, 5, and 7 under § 102(b) and the rejection of claim 2 under § 103(a) are affirmed. In contrast, the rejections of claims 4 and 6 under § 103(a) are reversed. "Any arguments or authorities not included in the brief will be refused consideration by the Board of Patent Appeals and Interferences. . . ." 37 C.F.R. § 1.192(a)(2002). Accordingly, our affirmances are based only on the arguments made in the brief. Any arguments or authorities not included therein are

AFFIRMED-IN-PART

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